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REPORT

ABM-RELATED ACTIVITY AT SARY-SHAGAN MISSILE TEST CENTER, LAUNCH COMPLEX F, USSR (TSR)

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ABM-RELATED ACTIVITY AT SARY-SHAGAN MISSILE TEST CENTER, LAUNCH COMPLEX F, USSR (TSR)

ABSTRACT

1. This report contains a detailed description of ABM-related activity at Sary-Shagan Missile Test Center, Launch Complex F It includes a map, 11 photographs, and two drawings.

INTRODUCTION

2. Launch complex F, Sary-Shagan Missile Test Center (SSMTC), is 2 nautical miles (nm) north of launch complex A, 30 nm northeast of launch complex B, and 50 nm northwest of launch complex D (Figure 1). Launch complex F supports the testing and development of the ABM-X-3 system. Components of this system include the FLAT TWIN tracking radar, a command guidance radar, and a canister-launched interceptor missile designated the SH-04. A conical missile observed on one occasion is tentatively associated with the ABM-X-3 system and may be the Soviet prototype of a high-acceleration endoatmospheric interceptor similar to the US Sprint missile. Construction at two launch sites at launch complex F indicates Soviet interest in the development of a silo-launched interceptor. There are currently six operational launch positions at complex F and three launch silos under construction.

DESCRIPTION

Launch Site 1

3. Concrete paving blocks were removed from the access aprons at inactive launch positions 1A and 1B between The concrete ready apron at launch site 1 was also dismantled The instrumentation arrays for each of the launch positions remained intact. Paving blocks from launch site 1 were probably used to supplement construction materials at launch site 3, launch complex F.

Launch Site 2

4. Launch site 2 is the only active SH-04 launch area at the complex. An SH-04 canister was continually observed engaged in the launcher at position 2A Since then the launcher has remained unoccupied Position 2C was occupied with an SH-04 canister The Soviets test fired an SH-04 missile from launch complex F the SH-04 canister had been removed from position 2C, and the blast mark discoloring the concrete to the rear of the

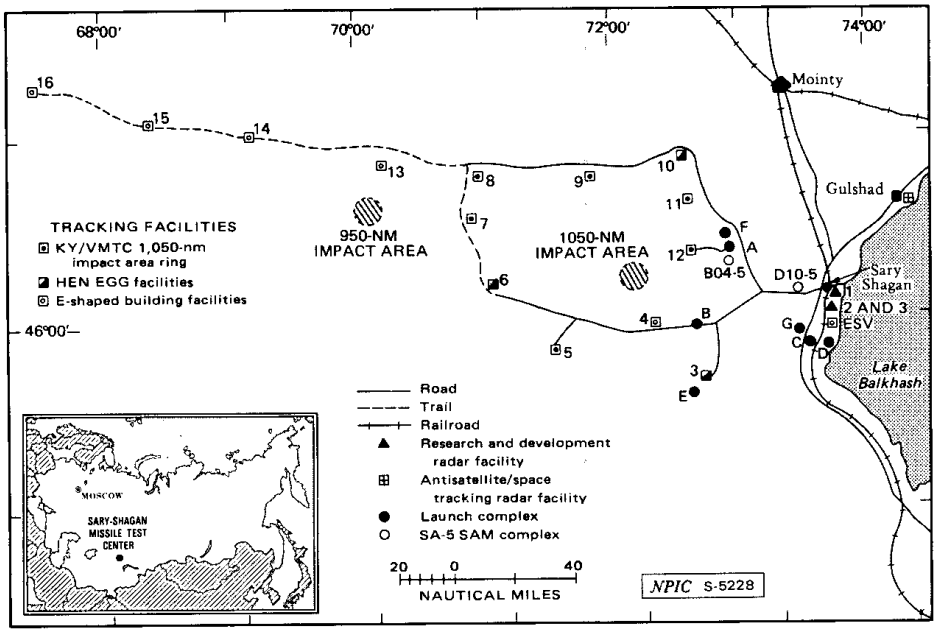

FIGURE 1. SARY-SHAGAN MISSILE TEST CENTER, USSR

launcher was more pronounced. A MAZ-543-type vehicle is used to transport the SH-04 canister and erect it to a vertical firing position. The transporter-erector was first identified at launch complex F and was observed at launch site 2 The second sighting of the vehicle at launch site 2 coincided with the SH-04 test activity. A MAZ-537 prime mover accompanied the transporter-erector. The purpose of the prime mover in the launch area is unclear, since the MAZ-543 is a self-propelled vehicle.

5. SH-04 missiles test fired from launch site 2 are checked out and assembled at Sary-Shagan Operations Support Base an SH-04 canister and transporter-erector were observed for the first time at a new location, the yard adjacent to the main hangar at Sary-Shagan Airfield Several SH-04 canisters have also been identified at the yard since that time in conjunction with GALOSH ABM 1B canisters and canister dollies.

6. Electronics-related activity was also noted at launch site 2 during the reporting period. The third dish antenna on the command guidance radar at the site was replaced the dish had been removed in 1975. Each dish appears to be independently steerable and one of the dishes was oriented toward zenith On two occasions the FLAT TWIN radar at site 2 was observed in a reoriented position. It usually faces a calibration tower and a series of intermediate clutter screens the radar was facing southwest but was returned to its regular azimuth Although the FLAT TWIN radar is trainable in elevation, it had consistently been observed with a 0-degree boresight elevation except during assembly of the radar in early 1971 however, the radar was facing zenith; it had resumed its regular orientation by

Launch Site 3

7. Three new launch positions at launch site 3 are in the final stage of construction. The aboveground ABM test position will be referred to as position 3A. The eastern and western silos will be referred to as positions 3B and 3C, respectively (Figure 2).

Launch Position 3A

8. Launch position 3A appears to be operational. While the launcher mechanism for the position has been installed since at least October 1976, the associated blast-deflecting flame bucket was not completed until July 1977. At that time, concrete pouring forms were attached to the edge of the flame bucket, and concrete was poured into the construction framework. The area around the flame bucket was backfilled. The fan-shaped instrumentation array to the rear of the launch position was completed by September 1977. Because of space constraints, the array is shorter and less symmetrical than the corresponding instrumentation array behind launch site 5 at launch complex F. Also there are no provisions at position 3A for the series of vertical masts forming the more remote rows of sensors in the launch site 5 array. A previous NPIC report contains a comparison of the geometry and dimensions of the two arrays.[2] Sensing elements were installed in the concrete blocks for the position 3A array, and cable trenching connects the individual elements along the length and width of the array to the control building. After completion, the trenching and concrete blocks for the array were then covered by earth.

9. Grading for the access apron serving position 3A was begun The apron was surfaced with concrete paving blocks and cleared of construction materials at which time the launch position could be considered operational. In addition to the control building, launch position 3A is also supported by a small building approximately 105 meters to the north that probably houses a tracking camera and a new building adjacent to the access road between launch sites 2 and 4. The buildings and launch position are integrated into the electrical/communications network connecting the individual launch sites with the main operations building at complex F (formerly referred to as Electronics Site C).

10. launch tube/canister was delivered to the concrete apron at position 3A by (Figure 3). Shadows precluded an accurate determination of the forward diameter, but the base diameter of the tube/canister Two reinforcing rings and a rear flange were observed on the tube/canister. the tube/canister had been installed horizontally in the launcher mechanism for position 3A. Figure 4 shows the completed launcher on coverage and a conceptual drawing. The rectangular launcher mechanism framework supported the tube/canister approximately above the base of the flame bucket. A crossbeam divides the launcher mechanism into two sections with approximately equal dimensions. One section overhangs the forward edge of the flame bucket by approximately The launcher mechanism is probably attached to a pair of pivot supports that would allow the tube/canister to be elevated to a preferred firing angle of 45 to 50 degrees. Launch position 3A has a fixed launch azimuth of 285 degrees. Both the launch tube/canister and

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the launcher mechanism had been stored at the transshipment yard of the Sary-Shagan Operations Support Base since at least April 1976. Construction on the launch position began in July of the same year.

11. The existing aboveground ABM test position at launch site 5, launch complex F, is of similar design but employs a different type of launcher mechanism a conical missile was slung under launch rail at this position and elevated to a firing angle of approximately 50 degrees. This was the first and only identification of a conical missile at complex F. Precise dimensions were difficult to determine, but the missile was estimated to be between . The launcher mechanism was modified in 1974 by the substitution of a launcher arm of open-frame lattice construction in place of the launcher rail.

12. Both positions 3A and launch site 5 at complex F appear to be associated with the development of a high-performance interceptor. Position 3A is expected to accommodate a smaller conical missile with dimensions compatible with the size of the new launch tube/canister. A missile of conical design is particularly suited to a high-acceleration ABM role. A recent NPIC report contains a discussion of new rocket motors at Soviet rocket motor research, development, and production facilities that may be related to high-performance conical missiles under development at SSMTC.[3]

13. Similar ground support equipment has been identified at both launch positions 3 and 5 at complex F. A transporter trailer serving launch site 5 was seen It was with a possible rail mechanism and a stepped forward section. A MAZ-537 prime mover was attached to the transporter. a transporter trailer with the same dimensions was observed aligned with the forward end of the horizontal launch tube/canister at position 3A. A MAZ-537 also accompanied this transporter. No missile was visible, suggesting that a training exercise may have been in progress.

Launch Positions 3B and 3C

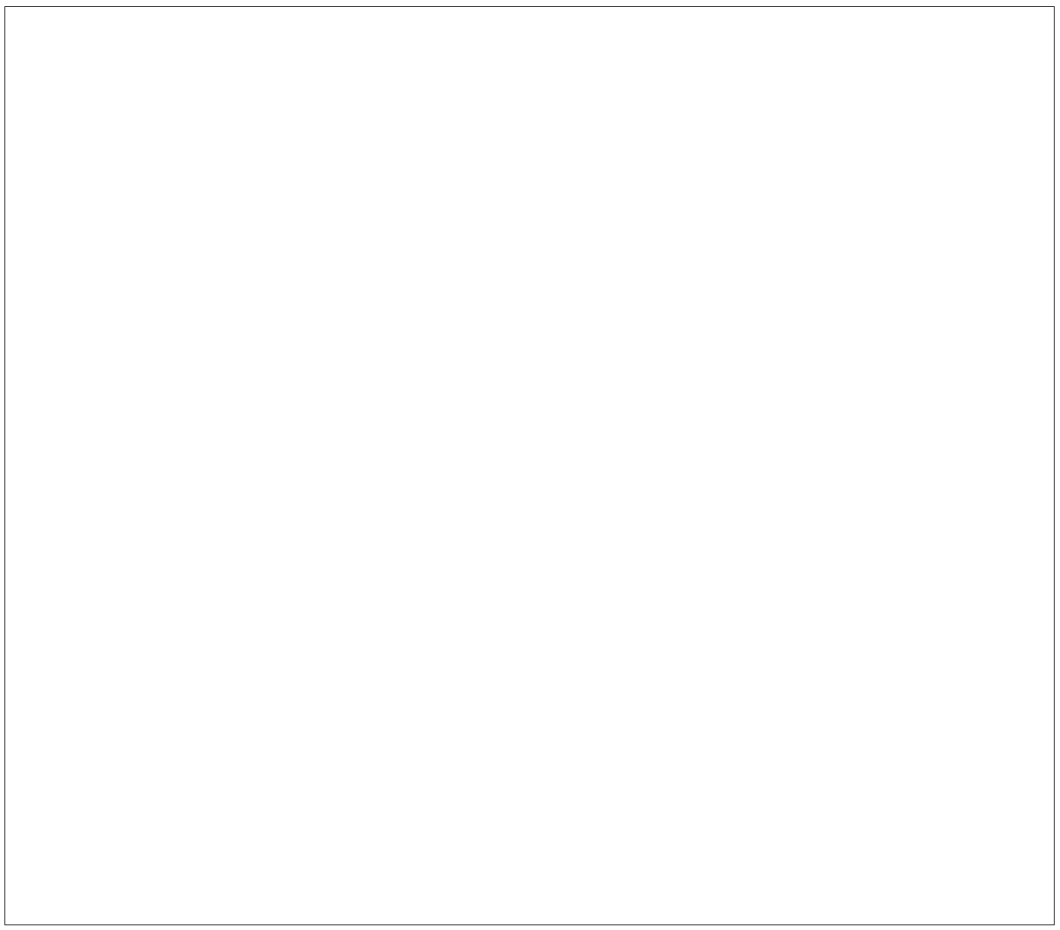
14. The missile launch silos at positions 3B and 3C, complex F, are nearly complete. Identical silo construction is underway at two new launch positions at facility C, Sary-Shagan

Launch Complex B A previous NPIC report details the early stages of silo construction at both complexes.[4] The missile system intended for the silos has not been determined nor has the relationship between the silos and the collocated aboveground position 3A been established.

15. Silo dimensions at 3B and 3C are significantly larger than the tube/canister at position 3A. The silos have exit and estimated depths of 21 meters based on the number of wall segments inserted into the initial silo corings. Segments with three different heights were adjacent to the two silos Six 3.0-meter-high segments appear to have been inserted first in each silo followed by a 2.0-meter-high and 1.0-meter-high segment. The top of the silo wall was visible at or slightly below grade level in the center of the silo coring when this insertion had been accomplished. Mobile construction cranes instead of overhead gantry cranes were used at launch site 3, during insertion of the silo wall segments into the 7.0-meter silo corings. Temporary covers were then placed over the silo apertures. Excavations for the silo headworks were dug around the periphery of the corings, and the arched facing blocks forming the upper sections of the corings were removed 3 meters of the silo wall was exposed in the enlarged excavation around position 3C (Figure 6). The space between the silo shafts and the silo walls at both positions was probably backfilled with earth instead of concrete.

16. The bottom of each excavation was prepared with reinforced concrete blocks to form the bases for the silo headworks. The headworks base component for the Soviet offensive SS-11 (III-D) missile silos is prepared in a similar manner. Prefabricated components for the two silo headworks were assembled on site on a single construction template. The headworks for position 3B was constructed the headworks for position 3C was constructed . Each headworks, with

inner and outer is probably formed from steel plates. Figure 7 includes a photograph and conceptual drawing of the silo headworks. A rectangular appendage, approximately was attached at 90 degrees to the side of each headworks after it was emplaced in the excavation. A linear trench was then extended from each appendage in the general direction of the control building for the silos. Conduits of preformed wedge-shaped sections were constructed on a concrete base in each trench and were joined to the headworks appendages. The shape and dimensions of the conduit sections appear similar to the steel and concrete pieces used to assemble the silo headworks component for the III-D missile silos the silo excavations had been backfilled; the headworks, appendages, and conduits were covered by earth, leaving only the small vents in the headworks appendages and the personnel entrances for the conduits exposed. Environmental control and silo monitoring/maintenance equipment will be housed in the headworks with access provided through the conduits and appendages. Permanent silo doors and door pockets have yet to be installed. Concrete aprons have yet to be constructed at both positions. Figure 8 shows the status of the silos at launch position 3B and 3C on Both silo apertures were temporarily covered and tracks had been installed at both positions. Movable environmental shelters will probably be constructed over these tracks.



17. A V-shaped pattern of trenches and small blocks probably for an instrumentation array extended approximately 75 meters north from the center of position 3B b The array is still under construction and may eventually contain sensing elements similar to those used with the position 3A array. The azimuth through the center of the array at 3B is 265 degrees while the azimuth through the center of both silos is 285 degrees.

18. A new transporter that is probably related to the ABM program at complex F was in the transshipment yard at the Sary-Shagan Operations Support Base . The MAZ-543-type transporter has an engine compartment on the left side and is 15.0 meters long. A rail device and cradle extend 5.0 meters from the rear of the vehicle. Transport of an ABM-sized missile or silo-loading operations can be performed by a vehicle of this type.

Launch Site 4

19. Activity at launch position 4E has resumed after a hiatus of approximately five years. Coring for a possible launch silo was begun at this position in January 1971 that year, section of a cylindrical, probably concrete structure with an inner diameter of was visible in the center of the excavation at 4E (Figure 10). Although the depth of the possible silo could not be determined, a significant spoil pile was nearby. The silo aperture was capped in July 1972 and eventually covered with earth between July and August 1974. The earth cover was removed , and the silo was uncapped Silo facing blocks similar to those used to shore the silo corings at launch site 3 were probably added to the top of the original silo wall within the excavation at position 4E. a work platform had been placed over the silo aperture; a crane and small cement mixer were in the vicinity the silo structure appeared to consist of two separate components (Figure 11). The outer silo wall was wrapped with light-toned materials, giving the structure a polygonal configuration. A dark-toned inner-wall segment protruded above the outer wall and stood above the base of the excavation. The distance across the top of the outer silo wall The dark-toned segment has inner and the area around the outer silo wall was backfilled and tracks were installed on either side of the silo aperture.

Canvas was stretched over frameworks mounted on the tracks to form an environmental shelter (Figure 12), which was completed The silo aperture was exposed between the sections of the shelter during the remainder of the reporting period.

20. Launch position 4E represents a departure from the silo construction techniques used at positions 3B and 3C at complex F. The original 4E silo may have been designed to accomodate a silo-launched version of the SH-04 ABM interceptor. Preliminary trenching behind the position for a possible instrumentation array indicated a firing azimuth of 285 degrees, consistent with the firing azimuths of other launch positions at complex F. With the signing of the ABM Treaty in May 1972, this program was apparently terminated and the launch position rendered inactive. The renewed construction and the nearly identical exit diameters at positions 3B, 3C, and 4E indicate involvement with the same silo-launched interceptor program. Position 4E is served by its own control building and would be integrated into the same electrical and communications network supporting the various launch sites at complex F. However, the internal configuration of the 4E silo is unclear. Numerous silo wall segments were inserted into the silos at 3B and 3C. Position 4E, however, has a single dark-toned segment of undetermined depth within the outer silo wall. It also lacks a headworks component. The position may be designated for preliminary silo testing of system components with later flight testing concentrated at the launch site 3 silos.

Launch Site 5

21. A platform had been placed over the forward edge of the launch position flame bucket The presence of the platform during the second period may have been related to launcher preparation for the test of a high-performance interceptor that probably originated from the launch site 5 position.[1] No burn marks or discoloration was observed at the position

22. A truck was aligned with the front of the launcher mechanism and a similar truck was next to the launcher A flatbed truck with an unidentified cargo was observed in another area of the launch site on only one previous occasion,

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Main Operations Building (Formerly Electronics Site C)

23. The electrical and communications network between the main operations building and the launch sites at complex F is being expanded. New trenching for electrical lines and cable trays will connect the building with the site 2 and site 4 FLAT TWIN radar and command guidance radar areas and the two new site 3 control buildings.

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MAPS OR CHARTS

SAC. US Air Target Chart, Series 200, Sheet 0245-9, scale 1:200,000 (UNCLASSIFIED)

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REQUIREMENT

Project 130000NV

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